

Manchester Urban Ponds Restoration Program

Pond Goals & Project Prioritization

Status Report
&
Recommendations to SEPP Advisory Committee




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&

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Introduction & Acknowledgements

The Manchester Urban Ponds Restoration Program (UPRP) is part of the Supplemental Environmental Projects Plan (SEPP) which is part of an agreement between the City of Manchester, NH Department of Environmental Services, and the US Environmental Protection Agency to address combined sewers in the City. From 2000 - 2005, seven (7) waterbodies in Manchester will be evaluated and monitored for restoration potential. Specific restoration projects will be identified, funded, and completed through this project. The Manchester Conservation Commission oversees the program.

The primary goal of the UPRP is to attempt to return the ponds to their historic uses (such as boating, fishing or swimming). Secondly, the UPRP attempts to promote public awareness, education, and stewardship through watershed meetings, clean ups, newsletters, and other educational events. In addidtion, the UPRP aims to reduce pollutant loading and nutrient inputs and improve water quality. The UPRP also tries to maintain or enhance biological diversity. Lastly, the UPRP attempts to provide improved recreational uses at each pond.

In April, 2002 members of the Manchester Conservation Commission met with the Urban Ponds Restoration Coordinator (Art Grindle) to discuss pond "goals" and project "prioritization." Each of the seven ponds was discussed at length with regards to potential water quality improvements, outreach/education opportunities, recreational opportunities, land preservation opportunities, and other management tasks. The result is a clearly defined set of goals and prioritized projects within each of the aforementioned categories. The following conservation commissioners were instrumental in contributing to this project: Jane Beaulieu, Joanne McLaughlin, Michael Poisson, Todd Connors, Eric Skoglund and Cyndy Carlson. This list was recently revised (April 2003) with additional assistance from JoAnn O'Shaughnessy and Kathleen Neville.

For more information on any of these projects, please contact the Urban Ponds Restoration Coordinator at (603) 624-6450 or agrindle@ci.manchester.nh.us.

Crystal Lake

Goal(s): To maintain fishable and swimmable water quality standards

Water Quality:

1) Address beach parking lot runoff/drainage issues.

2) Address Corning Rd runoff/drainage issues.

1994-1999: The health of Crystal Lake has been the focus of the efforts of the Crystal Lake Preservation Association (CLPA) since their inception in 1994. In 1999, the CLPA was awarded a grant from DES to install a new stormwater treatment system – the StormTreat system. This system now treats runoff from Bodwell Road and adjacent parking areas before it enters the lake. With this installation, one of only three surface water inlets is now being treated.

2002-2003: Comprehensive Environmental, Inc (CEI) was contracted through the SEPP to design plans to address items 1 & 2 above. The final design plans are now complete and are in the process of going out to bid for a contractor. These projects will include installation of best management practices (BMPs) at the two remaining outfalls that impact Crystal Lake. These outfalls contribute large amounts of sediment and nutrients to the lake during every rainfall. A series of catch basins drain the access road and parking area of the public beach and are connected to a culvert that outfalls at the north end of the beach. A sediment delta has developed here over the years. Preliminary plans have been designed to stabilize the shoulders of the access road with crushed stone and installation of proper drainage. Drainage of the parking area will also be improved. A grassed swale will be installed north of the parking area to treat the remaining runoff from the parking area.

The outfall that drains part of Corning Road is directly adjacent to a highly erodable steep slope. The slope contributes sediment that washes down Corning Road and into the drainage system. The slope also results in the necessity for intensive salt/sand treatment during winter months because of the high occurrence of icing on this section of road. These combined factors have formed a nutrient-rich sediment delta in the Lake at the point of the outfall.

At this location, a velocity-reducing device is proposed. Due to the steep slope of the area between Corning Road and the shoreline, a baffle tank is called for at the top of the drainage line. The two-baffle system will allow sediment to settle before continuing to the outfall. Installation of curbing along the south side of Corning Road will help prevent sediment eroding from the steep hillside from entering the drainage system.

3) Address *Phragmites* stand by chemical and mechanical treatments.

2003: Municipal Pest Management, Inc., has been working with UPRP to submit an application to the Department of Agriculture, Pesticide Board to spray Glyphosate (Rodeo) on the area in the growing season of 2004. The stalks from the dead plants will be cut above the ice during the winter and hauled away. The UPRP drafted and mailed a letter to abutters explaining the herbicide application process, and included a fact-sheet on *Phragmites* as well as one on Glyphosate.

4) Repair StormTreat System by adjusting headbox baffle wall.

Outreach/Education:

1) Continue providing educational materials in kiosk at beach.

2003: A series of color, laminated fact-sheets were created in 2002 and posted in the kiosk during the summer of 2003. These included a map of the waterbody/watershed, fact-sheets on the history of the waterbody, non-point source pollution issues, common exotic plants, and common fish. These were updated in November of 2003 and will be posted during the spring of 2004.

2) Conduct native planting workshop to address intensely-maintained shoreland areas.

3) Provide *Phragmites* education to property owners.

   2003: This was completed via an abutter mailing during the spring of 2003.

4) Provide Milfoil prevention education to property owners.

   2003: This was completed via an abutter mailing during the spring of 2003.

Recreational:

1) Support project partner efforts to preserve and restore beach house and address parking situation.

   2003: The Crystal Lake Preservation Association (CLPA) and For Manchester are working to address improvements to the beach house.

Land Preservation:

1) Support the advocacy of land conservation in areas where there is development pressure.

2) Provide careful consideration of land acquisition within the watershed.

   2001-2003: CLPA has also been active in attempts to preserve certain tracks of land adjacent to the lake that are threatened by residential development. This area, known as the Filip's Glen subdivision, is the only remaining open space in proximity to the lake. It is important for the long-term health of the lake that this area be developed only in the most environmentally sensitive way possible. The CLPA was able to purchase property proposed for development. The developer has donated the largest wetland portion of the property to the CLPA. This particular portion is the closest to the lake of all the properties in question. A significant amount of the Urban Ponds Restoration Program budget has been allocated for the ultimate purchase and preservation of large portions of the Filip's Glen subdivision property to help preserve the water quality of Crystal Lake.

Other:

1) Enhance Watershed Management Plan

Dorrs Pond

Goal(s): To restore fishable and swimmable water quality standards.

Water Quality:

1) Address tributary 2E runoff/drainage improvements.

2) Address tributary DP3 runoff/drainage improvements.

   2002: A grant was awarded to the Manchester Conservation Commission in January 2002 for a water quality improvement project on a tributary on the pond's east side (2E). The grant, Section 319 local watershed initiative funds, will pay for design and construction of a water quality improvement system in the East Inlet 2 (2E) drainage. The tributary collects runoff from approximately 66 acres of mixed-use land including a residential neighborhood and several large active commercial/industrial lots. The system will be designed to infiltrate as much storm water as possible and remove pollutants from runoff that does not get infiltrated. The project work is expected to take place during the summer and fall of 2004.

   During the fall of 2002, an environmental engineering firm, Comprehensive Environmental, Inc (CEI) was contracted to design plans to address items 1 & 2. The final design plans are now complete and are in the process of going out to bid for a contractor. The projects are expected to begin in 2004.

3) Perform wetland function study in the north end.

4) Perform possible sediment dredging in the north end to lessen nutrient load.

5) Address Goldfish Pond drainage by including outlet in regular sampling schedule and working with Hooksett Conservation Commission.

6) De-Channelize Ray Brook at outlet of Dorrs Pond

Outreach/Education:

1) Retrofit and provide educational materials in kiosk at Livingston Park.

   2003: A series of color, laminated fact-sheets were created in 2002 and posted in the kiosk during the summer of 2003. These included a map of the waterbody/watershed, fact-sheets on the history of the waterbody, non-point source pollution issues, common exotic plants, and common fish. These were updated in November of 2003 and will be posted during the spring of 2004.

2) Provide fertilizer education through signage at kiosk.

3) Address duck feeding through signage in kiosk and on shore.

4) Address invasive species through signage at boat ramp and kiosk.

   2003: A sign has been placed at the boat ramp stating that Dorrs Pond is currently free of aquatic exotic plants and instructing boaters to remove all plant fragments from their boats to keep exotics out of the waterbody.

5) Address organic debris accumulation at dam through collaboration with Parks & Recreation.

   This item is completed annually by the Parks & Recreation Department.

Recreational:

1) Work with Parks & Recreation with trail/Parking lot enhancement projects.

Trail improvements are also underway around the pond. In 2001, the Manchester Parks Recreation and Cemetery Department received a grant from the Land and Water Conservation Fund to carry out a major trail improvement project at Livingston Park. The grant was matched by a private local fund. The improvement plan will consist of trail improvements, handicap accessibility through approximately 50% of the trail network, boardwalk and bridge construction and viewing areas with benches. Bridges will be installed over seasonal stream crossings lessening the likelihood of stream channel disturbance and erosion. The park parking lot will be served by a runoff treatment system to treat runoff before it exits into Ray Brook. This project should be finished by June 2004.

Land Preservation:

1) Support the advocacy of land conservation in areas where there is development pressure.

2) Provide careful consideration of land acquisition within the watershed.

3) Secure adjacent parkland through zoning/easements and possible creation of "Town Forest."

Maxwell Pond

Goal(s): To assess the feasibility of dam removal and to conduct a habitat assessment.

Water Quality:

1) Conduct a dam removal feasibility study.
2) Address upstream sedimentation.
3) Address apartment complex runoff/drainage issues.
4) Assess habitat enhancement and support an increase of biodiversity.

2001-2003 : Plans are currently being discussed for possible dam removal at Maxwell Pond. In partnership with DES and Trout Unlimited (TU) the UPRP has been assisting with a feasibility study at Maxwell Pond to determine baseline conditions, and formulate hypotheses regarding the reaction of Black Brook to dam removal. Identification of existing channel location and conditions as well as historic, pre-dam channel characteristics is crucial to understanding the long term effects that dam removal may have on this site and the Black Brook corridor as a system. The dam removal feasibility study workplan includes aerial topographic surveying, stream channel morphology study, bathymetric survey and sediment depth mapping of Maxwell Pond, water quality monitoring of Maxwell Pond, and biomonitoring of Black Brook including macroinvertebrate surveys and fish surveys. If the dam is removed, approximately six miles of free-flowing stream would be restored.

Trout Unlimited was awarded a $13,850 grant from the NH DES local watershed initiative grant program in 2002 to conduct the first phase of the Black Brook corridor study, including photogrammetric mapping. This project produced an up-to-date aerial topographic map accurate to a contour interval of one foot.

Concurrent with the dam removal study, a restoration plan is being created for a disturbed site upstream of Maxwell Pond. A concrete aggregate and transportation operation has been impacting Black Brook for several years. Impacts include channel obstruction and filling as well as sedimentation and artificial bank armoring. The property owner has been cooperating with DES authorities to remedy the problems on the site, as well as to reconfigure stream crossings to allow proper fish passage and possibly relocate the stream channel to its historic location.

A Black Brook Advisory Committee (BBAC) has formed to take the project to the next level. City personnel from various commissions and departments as well as local citizens were called together to broaden the perspective of the project in 2003. A public informational meeting was held in 2003 and a meeting with the Board of Mayor and Aldermen to discuss the case for dam removal is scheduled for early 2004.

This project is supported by; the New Hampshire Fish and Game Department, the New Hampshire Department of Environmental Services, the New Hampshire River Restoration Task Force, and local chapters of Trout Unlimited, and the property owners; Wakefield Materials and the City of Manchester. Upstream abutters have expressed interest in the multi-year restoration initiative; several granted permission for the collection of geomorphic reference reach data on their property. The City of Manchester is contributing financially for the topographic survey and channel design work. Wakefield Materials is providing access to its property for the survey work, as well as material, equipment and labor. The NH Department of Environmental Services is providing ground control for the aerial survey and production of CAD-generated hardcopy topographic maps and funding for the bridge replacement. Volunteers from local Trout Unlimited chapters have assisted with the stream channel topographic surveys, electrofishing, collecting microinvertrabrates, riparian planting, and fry stocking.

Outreach/Education:

1) Construct and provide educational materials in kiosk at Blodgett Park.

2003: An Eagle-Scout constructed a kiosk at Wolfe Park in May, 2003. A series of color, laminated fact-sheets were created in 2002 and posted in the kiosk during the summer of 2003. These included a map of the waterbody/watershed, fact-sheets on the history of the waterbody, non-point source pollution issues, common exotic plants, and common fish. These were updated in November of 2003 and will be posted during the spring of 2004.

2) Examine and address the threat of invasive species.

2003: A partnership with the National Park Service and the New England Wildflower Society has developed and the workgroup is looking at invasive species management options on Maxwell Pond's southeast side.

Recreational:

1) Work with Parks & Recreation to construct a boardwalk and loop-trail around Maxwell Pond. This includes a small bridge over Black Brook.

2) Work with Parks & Recreation to install "debris" fencing along the northern side of the pond, adjacent to Manchester Gardens and other apartment complexes. Trash from nearby dumpsters is an increasingly big issue and should be addressed by installing a chain-linked fence or cedar, etc.

Land Preservation:

1) Secure adjacent parkland through zoning/easements.

McQuesten Pond

Goal(s): To secure conservation easements on private property adjacent to the pond.

Water Quality:

1) Long Term: Reduce pavement and restore shoreland in adjacent parking lots.

2) Short-Term: Advocate for on-site stormwater treatment systems.

Outreach/Education:

1) Construct and provide educational materials in kiosk at Wolfe Park.

2) Address invasive species through signage at kiosk and mailing to property owners.

3) Address duck feeding through signage at kiosk.

   2003: An Eagle-Scout constructed a kiosk at Wolfe Park in May, 2003. A series of color, laminated fact-sheets were created in 2002 and posted in the kiosk during the summer of 2003. These included a map of the waterbody/watershed, fact-sheets on the history of the waterbody, non-point source pollution issues, common exotic plants, and common fish. These were updated in November of 2003 and will be posted during the spring of 2004.

4) Address adjacent dumpster & lot runoff through business mailings and site visits.

Recreational:

1) Construct a board walk at north end of pond.

Land Preservation:

1) Secure conservation easements on private property abutting pond.

   Ongoing: Since McQuesten Pond is largely privately owned, City funded conservation projects are not feasible at this time on most of the pond. The focus remains on obtaining easements or ownership from key property owners of the wetland and open water areas. In the mean time, conservation efforts will continue at the city-owned Wolfe Park side of the pond.

2) Look into purchasing McQuesten Pond from the abutting landowners

Nutts Pond

Goal(s): To improve sport fishing and non-motorized/recreational boating opportunities. To improve water quality.

Water Quality:

1) Address urban runoff at four outfalls by completing a drainage study.

2) Investigate opportunities for NPS reduction in upper watershed areas.

3) Investigate opportunities to stabilize shoreline with native plantings.

2002-2003: During the winter of 2002 and 2003, a nutrient budget study was conducted for the Nutts Pond watershed by Comprehensive Environmental Inc. (CEI) to help identify the worst pollution sources. The watershed was broken down into five subwatersheds and nutrient inputs were calculated according to land use types in each subwatershed. East Inlet subwatershed, the largest subwatershed area (more the 13 million square feet) was found to be the largest contributor of nutrients to the pond (58%). This subwatershed contains extensive athletic fields, large heavily used paved lots, extensive residential neighborhoods, and several strip malls. This area should be the focus for the first BMP installations at Nutts Pond. Recommendations for possible treatment measures are included in a memorandum report by CEI.

Currently, CEI is working on designs for BMP installation in the Precourt Park area. Since the Parks & Recreation Department is planning on improving Precourt Park in the coming year, it seemed timely to focus attention on water quality improvements on the Ponds north end at the same time. To incorporate BMP's into the original park facelift design will save unnecessary duplication of destruction and construction. The BMP design will attempt to divide stormwater volume and infiltrate as much flow as the site allows.

Outreach/Education:

1) Retrofit and provide educational materials in kiosk at Precourt Park.

2003: An Eagle-Scout retrofitted the kiosk at Precourt Park during May, 2003. A series of color, laminated fact-sheets were created in 2002 and posted in the kiosk during the summer of 2003. These included a map of the waterbody/watershed, fact-sheets on the history of the waterbody, non-point source pollution issues, common exotic plants, and common fish. These were updated in November of 2003 and will be posted during the spring of 2004.

2) Provide outreach/education to area businesses through mailings and on-site pollution prevention assessments.

2002-2003: In 2002, the UPRP also created a pollution prevention business survey for facilities within the Nutts Pond watershed. From July through December 2003, 37 (out of 84) businesses in the Nutts Pond watershed were visited. These sites were chosen based on their proximity to Tannery Brook and Nutts Pond.

A few weeks prior to the visits, the businesses were mailed a letter explaining the project. During the visits, the store manager or facilities maintenance person was interviewed. Most businesses visited assessed on general information (whether they were aware of their proximity to Nutts Pond), solid waste/dumpster maintenance, floor drains, stormwater management, use oil, and use and/or storage of any other hazardous materials.

Most of the businesses were retail establishments that did not produce much solid waste and did not deal with any hazardous product storage or waste(s). All of the businesses surveyed were written a thank-you/follow-up letter, given suggestions for areas which needed improvement, and were also given an UPRP sticker for their window.

3) Address dumpster debris at Precourt Park through partnership with Parks & Recreation and Highway Department.

4) Address invasive species through signage at kiosk and at boat ramp.

2001: In 2001, Brazillian elodea was found and identified at Nutts Pond. The Department of Environmental Services (DES) installed an informational sign at the boat launch during the summer of 2002 and has since mapped the area(s) of infestation.

2003: An aquatic herbicide was applied on the invasive plant stands during summer 2003. The UPRP has also posted in the kiosk on this matter.

Recreational:

1) Partner with Queen City Trails Alliance/Manchester Rails-To-Trails to enhance pond circuit trail.
2) Investigate use of and potentially improve boat-launch

Pine Island Pond

Goal(s): To maintain fishable and swimmable water quality standards and to improve fish habitat.

Water Quality:

1) Stabilize streambank at Cohas Brook.

2) Address sedimentation at Cohas Brook where it enters Pine Island Pond.

Outreach/Education:

1) Retrofit and provide educational materials in kiosk at Pine Island Park.

   2003: An Eagle-Scout retrofitted the kiosk at Pine Island Park during May, 2003. A series of color, laminated fact-sheets were created in 2002 and posted in the kiosk during the summer of 2003. These included a map of the waterbody/watershed, fact-sheets on the history of the waterbody, non-point source pollution issues, common exotic plants, and common fish. These were updated in November of 2003 and will be posted during the spring of 2004.

2) Address accelerated plant growth through fertilizer education to property owners.

   2003: This was addressed by an educational direct mailing to pond abutters in 2003.

3) Address invasive species at Cohas Brook through volunteer maintenance efforts.

4) Support other entities to address boat wake issues.

Recreational:

1) Assess feasibility of fish ladder at dam with NHFG.

Other:

1) Develop Watershed Management Plan.

Stevens Pond

Goal(s): To improve water quality through a partnership with the New Hampshire Department of Transportation to address highway runoff.

Water Quality:

1) Address and remedy I-93 runoff issues.

   2001-2003: Since 2001, several agencies have been working on a solution to the highway runoff issue at Stevens Pond. The NH Department of Transportation has expressed willingness to work with DES and the UPRP to treat the highway runoff that is drastically affecting the water quality of Stevens Pond. Proposed solutions include a closed drainage system to divert stormwater to where adequate treatment can be attained, or a berm diversion system to separate the stormwater from Stevens Pond. Discussions with NH DOT are ongoing.

2) Address headwater erosion at EJ Roy Drive and other developed areas.

Outreach/Education:

1) Construct and provide educational materials in kiosk at boat launch.

2) Address invasive species with proper signage at kiosk and boat launch.

   2003: An Eagle-Scout constructed a kiosk at the Stevens Pond boat ramp during May, 2003. A series of color, laminated fact-sheets were created in 2002 and posted in the kiosk during the summer of 2003. These included a map of the waterbody/watershed, fact-sheets on the history of the waterbody, non-point source pollution issues, common exotic plants, and common fish. These were updated in November of 2003 and will be posted during the spring of 2004.

   2003: A sign has been placed at the boat ramp stating that Stevens Pond is currently free of aquatic exotic plants and instructing boaters to remove all plant fragments from their boats to keep exotics out of the waterbody.

Recreational:

1) Improve boat-launch.

2) Work with Parks & Recreational Department to create a wetland boardwalk.

3) Improve adjacent trails.

Land Preservation:

Secure adjacent parkland through zoning/easements.